Carl Moyer Program Advisory: 06-002

Clarifications to 2005 Carl Moyer Program Guidelines

This page updated March 10, 2006

On November 17, 2005, the Air Resources Board (ARB) approved revisions to the Carl Moyer Program Guidelines. The ARB staff issued the approved revision of the 2005 Guidelines on January 6, 2006. In February 2006, the Air Resources Board staff conducted district training sessions on the new Guidelines. The district training sessions and initial implementation of the project criteria identified typographical errors and areas in which the intent was not clear. In order to provide clarification on these issues, this advisory provides ARB staff's interpretation of some provisions of the 2005 Carl Moyer Program Guidelines to assist the districts with local implementation of the Program.

Part I, Chapter Two: Administration

Which Guidelines should districts use for Year 7 and Year 8 funds?

For Year 7, districts may choose to use either the 2003 Guidelines or the 2005 Guidelines. However, districts must use the same Guidelines for all of one fiscal year's funding. For Year 8, districts must use the 2005 Guidelines.

Can the $2 motor vehicle fee be used as match?
Yes, the $2 motor vehicle fee authorized under AB 923 can be used as match. However, only projects funded for mobile sources that meet the criteria of the Carl Moyer Program are eligible as match.

Please clarify how interest income should be treated.
Interest income from Carl Moyer Program funds must be used to fund projects that meet current Carl Moyer Program Guidelines. Districts are required to report the interest income annually. Projects funded from interest income must be reported in the annual report and the final report of the year from which the interest is obligated to a project.

Can project proponents apply for other grant funding?
This is discussed on page II-25, D. Project Applications in the second paragraph. The intent of this paragraph was not to prohibit applicants from submitting multiple applications. Instead district forms must include a statement from the applicant as to which, if any, other grant programs have been applied to for project funding. If grant funding is received from another entity, the applicant must comply with Section 44283(g) of the Health and Safety Code, which states:

> "for purposes of determining any grant amount pursuant to this chapter, the incremental cost of any new purchase, retrofit, repower, or add-on equipment shall be reduced by the value of any current financial incentive that directly reduces the project price, including any tax credits or deductions, grants, or other public financial

assistance. Project proponents applying for funding shall be required to state in their application any other public financial assistance to the project."

Any project proponent who is found to have received multiple funding for the same project without providing written notification to the appropriate district(s) of the amounts awarded shall, at a minimum, be disqualified from funding for that engine from all sources and may also be banned from submitting future applications to any and all Carl Moyer Program solicitations. In addition, as a violation of law, including but not limited to the Business and Professional Code, ARB and/or the districts may levee fines and/or seek criminal charges.

Can a district make payment to an engine distributor or dealer rather than to the project applicant?
Paragraph VIII.C.2. Itemized Invoices, on page II-30 of the administrative guidelines provides flexibility to the districts in this regard. Payment may be made to the engine distributor or dealer if such payment arrangements are specified in the contract between the district and the project proponent.

Please clarify Paragraph VIII, G, Page II-32, Administrative Guidelines, regarding the ability to seek fines.
Section 43016 of the Health and Safety Code authorizes ARB to seek remedies for violations of "any order, rule, or regulation adopted pursuant to this part". The intent of this language is to disclose to the applicant that ARB can apply fines or seek other remedies if necessary to assist districts with enforcement. The districts can also seek remedies by enforcing the contract terms through contract law and provisions of the Business and Professions Code.

Can a district charge the project applicant a fee for engine inspection(s)?
No. Performing engine inspections is part of the administration of the Carl Moyer Program. The cost to the district of performing such inspections may be covered by the program administration funding provided to each district.

Clarifications in Chapter Two

Page II-11. Section E. Obligation. The second bullet reads as follows:

- *The Air Pollution Control Officer (APCO) or designated district staff, if given the authority by the governing board, approves a contract.*

ARB would also consider the selection of a project by the APCO or designated staff, if given the authority by the governing board, as obligated funds.

PART II: PROJECT CRITERIA

How should a district document if there are no diesel retrofits verified (for an off-road project), or if a retrofit is not technically feasible (for on-road or off-road projects)?

For off-road diesel equipment repowers, an ARB-verified diesel emission control strategy is required if one is available. Districts should consult the ARB verification website to determine if there is a retrofit available. Districts should document their determination in the project file. If there is a significant delay between the time the district checked the website and the time funds are obligated to the project, district may opt to re-check the website. If no retrofit is available, districts must inform their ARB liaison by e-mail. No ARB approval is necessary to proceed with the project. For both on-road and off-road repower projects, a retrofit is not required if there is a technical reason the retrofit cannot be installed. If this is the case, the district should document this determination in the project file, and inform their ARB liaison by e-mail. No ARB approval is necessary to proceed with the project.

Chapter One: Heavy-Duty On-Road Vehicles

What effect does the Public Fleet Rule have on the ability to fund projects in this sector?

The Air Resources Board adopted the Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel Vehicles operated by Public Agencies and Utilities at its December 8, 2005 Board Hearing. The rule mandates municipal and utility vehicle owners reduce diesel PM emissions from their affected vehicles through the application of Best Available Control Technology on these vehicles by specified implementation dates. The Board adopted the proposed regulations with some modifications. Therefore, a 15-day notice will be forthcoming. Once the regulation is complete, ARB will issue an advisory for funding Carl Moyer Program projects subject to the Public Fleet rule. In the interim, districts should work with their ARB liaison to determine project eligibility.

Clarifications in Chapter One

Page I-14, E. Retrofit. The third bullet reads:

- *Retrofit projects that control PM must use the highest level cost-effective technology available for the equipment being retrofitted….*

This is a typographical error. The highest level technology available must be applied regardless of cost-effectiveness. The Carl Moyer Program will only pay for the portion of the project that is cost-effective.

Page I-18, M. Solid Waste Collection Vehicles. The last sentence of the first sub-bullet, under the first bullet, reads:

"The project life for 50 percent of the vehicles is four years and the remaining 50 percent is four years."

This is a typographical error. The underlined "four" should be replaced with "three."

Clarifications to Appendices Related to Heavy-Duty On-Road Vehicles

Page D-4. The first bullet reads:

- *School bus calculations shall use the MHD or HHD vehicle emission factor and conversion factors depending on GVWR to calculate cost-effectiveness.*

This is incorrect. School bus calculations shall only use the MHD vehicle emission factors and conversion factors when calculating cost-effectiveness.

Chapter Two: Fleet Modernization

Are there different requirements for school buses participating in the fleet modernization program?
Not at this time. ARB staff is currently working with local air districts and other groups to evaluate a fleet modernization program that is specifically tailored to the unique operating characteristics of school buses. If ARB staff determines that a unique program is warranted, a Carl Moyer Program Advisory will be issued to describe this program.

Clarifications in Chapter Two

Page II-9. VI. Potential Projects. When selecting the appropriate DECS for a given project, the selection must be based on criteria developed by the respective district. This procedure contains criteria outlining the methodology/preference for the selection of the highest level of emission reductions.

Page II-11. B. Participant Requirements. Second bullet. The Target Vocation Category includes public fleet vehicles in low-population areas as defined in the public fleet regulation adopted by the ARB in December 2005.

Page II-13. C. Replacement Vehicle Requirements. Under "ARB Verified Diesel Emission Control System (DECS)," the district selection process is the same as described earlier under "Potential Projects."

Page II-16. Table 2-2, Minimum Application Requirements for Fleet Modernization. The subcategory titled "New Vehicle Information" is replaced with "Replacement Vehicle Information."

Chapter Three: Reducing Idling Emissions from Heavy-Duty Vehicles

Are APU engines less than 25 horsepower eligible for Carl Moyer Program funding?
Yes.

Clarifications in Chapter Three

Page III-3. The second paragraph identifies the baseline for calculating the benefits of truck idle reduction projects beginning with the 2008 calendar year as 15.1 g/hr NMHC+NOx and 0.087 g/hr of PM. In order to use these emission rates in calculations, the fuel correction factor and ROG conversion factor must be applied. The converted emission rates to use for calculation purposes are: ROG = 0.9 g/hr, NOx = 13.6 g/hr, and PM = 0.070 g/hr.

Page III-6, Section B, APUs and Alternative Technologies. These project criteria were not updated to reflect the ARB's adoption of an idling reduction ATCM in October 2005. Only the incremental cost and the incremental cost of installing an APU that is cleaner than required by the regulation is eligible for funding.

Clarifications to Appendices Related to Reducing Idling Emissions

Page D-22. Section III, Heavy-Duty Truck Idle Reduction. This section was not updated to reflect the ARB's adoption of an idling reduction ATCM in October 2005. The section should be replaced with the attachment to this Advisory.

Chapter Four: Transport Refrigeration Units

Are TRU engines less than 25 horsepower eligible for Carl Moyer Program funding?
Yes.

Chapter Five: Compression-Ignition Off-Road Equipment

How does the Carl Moyer Program handle auxiliary engines?
The Carl Moyer Program allows funding for auxiliary engines on mobile equipment that are considered an integral part of the vehicle's main function. ARB regulates these auxiliary engines through the ATCM for Diesel Particulate Matter from Portable Engines. This ATCM is applicable to all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel, except for those specifically excluded in Title 17, California Code of Regulations Section 93116.1 (b). These engines are eligible for Carl Moyer Program funding until January 1, 2007 if the engine was registered in ARB's Portable Engine Registration Program prior to January 1, 2006.

How will the cargo handling rule affect funding in this category?
In December 2005, the Board approved a regulation on mobile cargo handling equipment at ports and intermodal rail yards. Once the regulation is complete, ARB will issue an advisory for funding Carl Moyer projects subject to the Cargo Handling rule. Until this advisory is released, district staff should contact their ARB liaison with all questions regarding project eligibility.

Clarifications in Chapter Five

Page V-3, Table 5-2. Footnote (a) reads:

(a)ARB model years, U.S. EPA model years for Tier 1 start at 1998 for 50=<75 hp and 75=<100 hp, and 1997 for 100=<175 hp.

This footnote should also note that Tier 1 starts at 1999 for 25 =<50 hp. Footnote (a) should also be added to the Tier 1 model year range for 25=<50 hp.

Clarifications to Appendices Related to Compression-Ignited Off-Road Equipment

Page D-33, Example 2. The default load factor shown in this example is 0.43. The correct default load factor is 0.65.

Chapter Eight: Locomotives

Page VIII-13. The following bullet is needed for clarification in Section D,

- Only engine remanufacture kit parts (plus installation costs) which are integral to achievement of the U. S. EPA certified emission level are eligible for Carl Moyer Program funding. Baseline costs for engine remanufacture kits shall reflect the typical cost to remanufacture the project engine in a manner consistent with existing regulatory requirements (i.e., to uncontrolled emission levels for Class III railroads. Class I railroads' required emission level depends upon the locomotive model year).

Chapter Nine: Marine Vessels

Are electronic monitoring units (EMU) required on marine vessel projects?
Installation of an EMU is not required for Year 8 funded marine projects. South Coast Air Quality Management District (AQMD) has agreed to conduct a pilot for year 8 funds that would require EMUs compliant with the minimum specifications listed in Advisory 06-001 be installed on South Coast AQMD marine projects. ARB will use the information gained from South Coast AQMD's experience procuring EMUs for Year 8 funded marine projects to update the minimum EMU specifications listed here with regard to marine projects for Year 9 projects. Please consult Advisory 06-001 for more information.

Clarifications in Chapter Nine

Page IX-10. The first complete bullet reads:

- *Only marine vessel engines with a United States Coast Guard Documentation Number or IMO/Lloyd's Number are eligible for Carl Moyer Program funding. This information must be included in the project application.*

The U.S. Coast Guard Documentation Number can also be on the vessel, and would be acceptable.

Page IX-10. The following bullet is needed for clarification:

- Marine vessel project criteria and guidelines apply to marine vessel engines ≥50 horsepower. Refer to the off-road engine project criteria and guidelines for marine engines between 25 and 50 horsepower (Table 5-2, page V-3).

Clarifications to Appendices Related to Marine Vessels

Page B-17, Table B-18. 2005 and 2006 model year marine vessel engines between 300 and 750 horsepower and cylinder displacement >2.5 liters per cylinder should use the following emission factors when calculating cost-effectiveness: 7.6 g/bhp-hr NOx, 0.82 g/bhp-hr ROG, and 0.274 g/bhp-hr PM.

Chapter Ten: Agricultural Sources

Page X-14, Table 10-4, Minimum Application Information for Stationary and Portable Agricultural Engine Projects. In the section entitled "Equipment Information," only the "Equipment Type" is required. The section entitled "Electronic Monitoring Unit" should be deleted.

Chapter Twelve: Zero Emission Technologies

Is ancillary equipment for electrification of agricultural pumps, such as variable frequency drives and soft start technology, an eligible expense under the Carl Moyer Program?
At the discretion of the district, ancillary equipment may be eligible expenses under the Carl Moyer Program if the district determines that the equipment is necessary for the project.

Clarifications in Chapter Twelve

Page XII-7. The first bullet reads:

- *The cost-effectiveness limit for electric forklifts is $7,000 per weighted ton of reduced emissions.*

This cost-effectiveness limit was only intended to apply to electric forklifts with a lift capacity between 3,000 and 6,000 pounds. The cost-effectiveness limit for electric forklifts with a lift capacity above 6,000 pounds is $14,300 per weighted ton of reduced emissions.

Clarifications to Appendices Related to Zero-Emission Projects

Page D-67. Example 4. This example was not updated to reflect the ARB's adoption of an idling reduction ATCM in October 2005. Please refer to the calculation in the attachment to this Advisory for an example of an electric idle reduction project.

Attachment

I. Heavy-Duty Truck Idle Reduction

This section provides an example calculation for determining the cost-effectiveness of surplus emission reductions for heavy-duty truck idling reducing technology projects.

A. General Criteria for Heavy-Duty Truck Idling Reducing Technologies Cost-Effectiveness Calculations

- The incremental cost, up to $5,500, of an auxiliary power unit (APU) may be funded.
- The incremental installation cost of an APU, including installation of an hour meter, up to a maximum of $3,400 per electric motor or fuel cell APU, may be funded.
- The cost of a PM retrofit may be funded provided the overall project cost effectiveness is under the limit of $14,300
- For these calculations, PM10 refers to combustion PM10.
- The minimum project life is three years.
- Annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour meter. A properly functioning hour meter is required to support equipment activity information included in the application for Carl Moyer Program funding.
- Applicants may claim ROG emission reductions from DECS if hydrocarbon emission reductions for that technology are obtained from the ARB's retrofit website at: http://www.arb.ca.gov/diesel/verdev/verdev.htm. For the Carl Moyer Program, ROG emission reductions will be credited at the 25 percent, 50 percent, and 85 percent reduction levels. To calculate emission reductions of ROG for the Carl Moyer Program, applicants should use the percentage reduction of hydrocarbons from the ARB's retrofit website to determine the appropriate "level" of emission reductions. For example, a technology that provides a 40 percent emission reduction of hydrocarbons would be permitted to apply a 25 percent reduction in ROG emissions for determining eligibility and grant amount in the Carl Moyer Program.
- Default maximum project life:

Off-road new purchase	10 years
Off-road repower	7 years
Repower + retrofit	5 years
Retrofit	5 years

Project life beyond the default maximum may be submitted with documentation for approval by ARB.

B. Example

Example 1 – Electric APU Project

A HDV truck operator proposes to install an idle reduction system consisting of an electrical plug, inverter/charger and electrical HVAC on a HDV to provide shore power for the truck. The APU operates 1,800 hours/year.

Annual Baseline Idling Hours at truck stop in California:	1,800
Idling Power Requirement	2.7 kw = 1.99 hp
Idling Substitution Rate:	100%
Conversion factor:	1 ton = 907,200g
Cost of electrical plug, inverter/charger and electrical HVAC:	$10,000
Installation Cost:	$4,000
Capital Cost of Diesel APU	$6,000
Installation Cost of Diesel APU	$2,000
Incremental Cost	$6,000
Amount Requested	$6,000

The truck idling emission rates for 2007 are: 191.5 g/hr of NOx, 25.6 g/hr of ROG and 1.5 g/hr of PM (*Table B-9*).

The APU idling emission factors for 2008 and subsequent years are:
13.6 g/hr for NOx, 0.9 g/hr and 0.070 g/hr for PM

Formula C-3: Estimated Annual Emissions by Pollutant (tons/yr):
Truck emissions in 2007 are:
NOx = (191.5 g/hr)(1800 hrs/year)/(907,200 g/ton) = 0.38 ton/yr
ROG = (25.6 g/hr)(1800 hrs/year)/(907,200 g/ton) = 0.051 ton/yr
PM = (1.5 g/hr)(1800 hrs/year)/(907,200 g/ton) = .003 ton/yr

Formula C-10: Annual Surplus Emission Reductions by Pollutant (tons/yr)
Baseline – Reduced (electric idle reduction is the reduced technology so emissions = 0)
NOx = 0.38 ton/yr - (0.0 ton/yr) = 0.38 ton/yr
ROG = 0.051 ton/yr - (0.0 ton/yr) = 0.051ton/yr
PM = 0.003 ton/yr – (0.0 ton/yr) = 0.003 ton/yr

Formula C-2: Annual Weighted Surplus Emission Reductions:
Annual Weighted Surplus Emissions Reductions in 2007:
(0.38 ton/yr) + (0.051 ton/yr) + (20)(0.003 ton/yr) = 0.461 ton/yr

Formula C-3: Estimated Annual Emissions by Pollutant (tons/yr):
APU emissions in 2008 are baseline: 13.6 g/hr of NOx,
0.9 g/hr of ROG and 0.07 g/hr of PM
NOx = (13.6 g/hr)(1800 hrs/yr)/(907,200 g/ton) = 0.03 ton/yr
ROG = (0.9 g/hr)(1800 hr/yr)/(907,200 g/ton = 0.002 ton/yr
PM: = (0.07 g/hr)(1800 hrs/yr)(907,200 g/ton) = 0.0001 ton/yr

Reduced emissions in 2008 are the APU baseline values because the electric idle reduction has zero emissions.

Formula C-2: Annual Weighted Surplus Emission Reductions:
Annual Weighted Surplus Emissions Reductions in 2008 are
(0.03 ton/yr) + (.002 ton/yr)) + (20)(0.0001 ton/yr) = 0.034 ton/yr

2009 is same as 2008

Average over three years is:
((0.461 ton/yr) + (0.034 ton/yr) + (.034 ton/yr))/(3) = 0.176 tons/yr

Cost and Cost-Effectiveness Calculations
The annualized cost is based on the incremental cost of the electrification package, the expected life of the project assumed to be 3 years, and the interest rate (4%) used to amortize the project cost over the project life. The maximum amount that can be funded by the Carl Moyer Program fund is determined as follows:
CMP Amount Requested: $6,000
Formula C-13: Capitol Recovery Factor (CRF):
CRF = 0.360 (*from Table B-1*)
Formula C-12: Annualized Cost ($):
Annualized Cost (0.360)($6,000)= $2,160/yr
Cost-Effectiveness (Based on weighted average emissions reduction)
($2,160/year)/(0.176 tons/year)= **$12,273/ton**.

If the project starts in 2008:

Annual Weighted Surplus Emissions Reductions in 2008 are:
(0.03 ton/yr) + (.002 ton/yr)) + (20)(0.0001 ton/yr) = 0.034 ton/yr
This is the same for 2009 and 2010 if the project has a three year life.

So the cost-effectiveness is:

($2,160)/(0.034 tons/year)= **$63,529/ton**

Amount that would qualify:
($14,300)*(0.034)/(0.361) = **$1,347**